



Development of Regional Background Levels for Sediment Associated PFAS in the Great Lakes

Dredging Operations Environmental Research (DOER) Program

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

Focus Area

Risk Management

Problem

Per- and polyfluorinated alkylated substances (PFAS) are a ubiquitous class of emerging contaminants of concern known to cause human health effects at exceedingly low environmental concentrations (e.g., parts per trillion in drinking water). While to date much of the attention by regulators and research focus has been on impacts to drinking water and ground water, PFAS is known to be globally distributed across all environmental media including sediment. A preliminary survey of representative dredged materials and coastal sediments collected from locations throughout the US found measurable quantities of PFAS in every sample evaluated. Given the ubiquity of PFAS, near certainty of their presence in dredged materials, and increasingly stringent regulatory levels (which may be applied to dredged material management in the near future, especially in the Great Lakes), a key critical first step will be the development of a basis for contextual understanding of sediment associated concentrations of PFAS.

Study Description

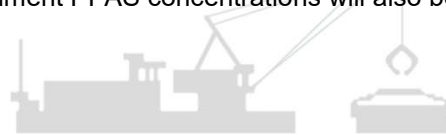
We propose to use an approach consistent standard guidance to derive regional background concentrations for sediment associated PFAS using data from recent sediment surveys (e.g., those conducted by USGS, NOAA, and other agencies and academic institutions) along with data from sediment samples to be collected for this project in proximity of USACE managed federal navigation channels throughout the Great Lakes. Sediment PFAS concentrations will also be used to develop or model regional background values for sediment elutriates. Finally, development of regional background values could be expanded to include soil and sediment from areas representative of beneficial use application types (e.g., wetlands, beaches, agricultural fields, levees, landfill cover) within the Great Lakes.

Products

This project will generate regional background concentrations of sediment associated PFAS in aquatic sediments representative of USACE managed federal navigation channels and from soils/sediments representative of potential beneficial use applications throughout the Great Lakes. Results will be communicated with district dredged material managers prior to being summarized in one or more peer reviewed journal publications describing the approach and technical basis for derived background values. In addition, a consensus guidance document (reviewed / co-authored by relevant stakeholders) summarizing how the values may be used to support sound risk management decision making will be developed.

Summary

Per- and polyfluorinated alkylated substances (PFAS) are a ubiquitous class of emerging contaminants of concern known to cause human health effects at exceedingly low environmental concentrations. Given the ubiquity of PFAS, near certainty of their presence in dredged materials, and increasingly stringent regulatory levels, a key critical first step will be the development of a basis for contextual understanding of sediment associated concentrations of PFAS. We propose to derive regional background concentrations for sediment associated PFAS using data from recent sediment surveys along with data from sediment samples to be collected for this project in proximity of USACE managed federal navigation channels throughout the Great Lakes. Sediment PFAS concentrations will also be used to develop or model regional background values for sediment elutriates.



Balancing operational and environmental initiatives and meeting complex challenges of dredging and dredged material placement in support of the navigation mission.

